APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,289	01/14/2005	Hubrecht Lambertus Tjalling De Bliek	NL 020623	8513

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EXAMINER
BROOME, SAID A

ART UNIT	PAPER NUMBER
2628	

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/521,289	DE BLIEK, HUBRECHT LAMBERTUS TJALLING
	Examiner	Art Unit	
	Said Broome	2628	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2002*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　a)☐ All   b)☐ Some * c)☐ None of:

　　1.☐ Certified copies of the priority documents have been received.

　　2.☐ Certified copies of the priority documents have been received in Application No. _____ .

　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1-14-05*

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 8 is rejected under 35 U.S.C. 101 because it contains the statement: "A computer program characterized...", which is non-statutory subject matter because a program must be encoded on a computer readable medium for causing the computer to execute in order to be considered statutory subject matter. Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035. Accordingly, it is important to distinguish claims that define descriptive material per se from claims that define statutory inventions.

Claims 1-7 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim 1 recites "A method of producing and displaying an image..." however no tangible result is produced. Therefore, the claimed invention does not

posses "real world" value, and instead represents nothing more than a method of displaying and a

computer program. The tangible requirement does not necessarily mean that a claim must either

be tied to a particular machine or apparatus or must operate to change articles or materials to a

different state or thing. However, the tangible requirement does require that the claim must recite

more than a § 101 judicial exception, in that the process claim must set forth a practical

application of that § 101 judicial exception to produce a real-world result. Benson, 409 U.S. at

71-72, 175 USPQ at 676-77 (invention ineligible because had "no substantial practical

application.").

In State Street, the Federal Circuit examined some of its prior section 101 cases,

observing that the claimed inventions in those cases were each for a "practical application of an

abstract idea" because the elements of the invention operated to produce a "useful, concrete and

tangible result." State Street, 149 F.3d at 1373-74, 47 USPQ2d at 1601-02. For example, the

court in State Street noted that the claimed invention in Alappat "constituted a practical

application of an abstract idea (a mathematical algorithm, formula, or calculation), because it

produced 'a useful, concrete and tangible result'—the smooth waveform." Id. Similarly, the

claimed invention in Arrhythmia "constituted a practical application of an abstract idea (a

mathematical algorithm, formula, or calculation), because it corresponded to a useful, concrete

and tangible thing—the condition of a patient's heart."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on
sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by

Schneider (US Patent 5,531,227).

Regarding claim 1, 8 and 9, Schneider describes a method of producing and displaying an

image of a volume from a multi-dimensional object data set in column 8 lines 4-7 (*"...to gather*

follow image information, an MRI scan of the patient's head and stereotactic frame is taken, and

the three-dimensional data (including coordinate data relating to the patient's head and the

stereotactic frame) are processed..."), and is also shown in Figure 2. Schneider also describes a

computer system in column 7 lines 14-20 (*"Processing means 16 may be a stand-alone computer*

such as a SGI RealityEngine (available from Silicon Graphics, Inc.) which has been loaded with

suitable software. Alternatively, processing means 16 may be an image processor specially

designed for this particular application.") that performs the processing of the image graphics

data, therefore the computer program or software recited in claim 8 is run on the computer

system 16, as illustrated in Figure 2 and as recited in claim 9. Schneider describes a surface

associated with the volume is identified in column 5 lines 13-26 (*"Typically the lead view is the*

line of view through which the physician at any given time wishes to view the procedure...the

lead view is the physician's view of the surface of the patient, the lead image could be a

corresponding video image of the surface of the patient.") and in column 9 lines 62-67 (*"...real*

time lead images of the patient's head along the physician's line of sight are obtained..."), where

it is described that the user identifies a certain region of the surface. Schneider also describes an

initial position on the identified surface is selected in column 9 lines 43-45 ("*...the fiducial*

marker can be added to the object prior to imaging solely for the purpose of providing a unique

marker, such as a marker on the scalp. Such a marker would typically be selected to be

visible..."). Schneider also describes at least one depth associated with the identified surface is

selected and a reformat slice is produced from the object data set at the selected depth along the

normal to the identified surface at the selected initial position in column 11 lines 29-34 ("*The*

three-dimensional follow image is also sliced to a depth selected via a depth control."), where it

is described that the follow image slice, which resides in the image plane orthogonal to the user,

as described in column 5 lines 29-35 ("*A properly sliced and transformed follow image will*

usually be in a plane parallel with that of the lead image, and consequently, orthogonal to the

lead view..."), is therefore produced at a certain depth along the normal.

Regarding claim 2, Schneider describes at least one further position on the identified

surface is selected in column 9 lines 59-62 ("*...the fiducial markers in the lead images have been*

identified, the system is ready for use in real time imaging during a medical procedure."), where

it is described that multiple markers are used to identify surfaces. Schneider also describes a

reformat slice is produced at said selected depth along the normal to the identified surface at said

further selected position in column 11 lines 29-34 ("*The three-dimensional follow image is also*

sliced to a depth selected via a depth control."), where it is described that the follow image slice,

which resides in the image plane orthogonal to the user, as described in column 5 lines 29-35 ("*A*

properly sliced and transformed follow image will usually be in a plane parallel with that of the

lead image, and consequently, orthogonal to the lead view…"), is therefore produced at a certain

depth along the normal.

Regarding claim 6, Schneider describes the reformat slice is perpendicular to the normal

to the identified surface at the selected point on the identified surface, at the point on the

reformat slice where the reformat slice is intersected by said normal to the identified surface in

column 5 lines 29-35 ("*A properly sliced and transformed follow image will usually be in a*

plane parallel with that of the lead image, and consequently, orthogonal to the lead view…"),

where it is described that slices are orthogonal, or perpendicular, to the normal or line of view

that corresponds to the identified surface at the selected position, as described in column 5 lines

12-15 ("*… "lead view" means the line of view toward the object at any given time. Typically the*

lead view is the line of view through which the physician at any given time wishes to view the

procedure.").

Regarding claim 7, Schneider describes a reformat slice, which is slice produced from the

three-dimensional image at a certain depth as described in column 11 lines 29-34 ("*The three-*

dimensional follow image is also sliced to a depth selected via a depth control."), and is

produced from a stack of reformat slices produced perpendicular to the normal to the selected

point on the surface, as described in column 2 lines 24-28 ("*A computer develops a three-*

dimensional image of the patient's skull (including the markers) by taking a series of "slices" or

planar images at progressive locations, as is common for CT imaging, then interpolating

between the slices to build the three-dimensional image."), where it is described that it is known

in the art that three-dimensional volumetric images are a collection of several slices at different

depth values, therefore the three-dimensional image , as described in column 10 lines 28-39

("...*slicing algorithms involve designating a plane of slice in the three-dimensional image and*

instructing the computer to ignore or to make transparent any data located between the viewer

and that plane...The resulting image is a two-dimensional representation of the view into the

three-dimensional object sliced at the designated plane."), is a stack of slices.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider

in view of Burke et al.(hereinafter "Burke", US Patent 6,421,454).

Regarding claim 3, Schneider describes reformat slices are produced perpendicular to the

normal to the identified surface at the selected position in column 5 lines 29-35 ("*A properly*

sliced and transformed follow image will usually be in a plane parallel with that of the lead

image, and consequently, orthogonal to the lead view..."), where it is described that slices are

orthogonal, or perpendicular, to the normal or line of view to the identified surface at the selected

position. Schneider fails to teach the depth associated with the identified surface is selected by

selecting one of those reformat slices. Burke teaches the depth associated with the identified

surface is selected by selecting one of those reformat slices in column 11 lines 34-40 ("*The*

image processor 14 then selects (step 134) a planar slice at depth Z_n from the three dimensional

ultrasound data, for example slice 125 which is parallel to the underlying transformed x-ray

image plane..."), where it is described that the slice is selected at a certain depth. It would have been obvious to one of ordinary skill in the art to combine the teachings of Schneider with Burke because this combination would provide a user with three-dimensional slices of volumetric data that may present desired regions of the volumetric data through designation of a certain depth within the slices, such as by manually selecting the desired slice.

Regarding claim 5, Schneider fails to teach the limitations. Burke teaches an identified surface of the volume selected based on predetermined information, in column 11 lines 25-29 ("...*having previously determined and applied the proper scale, rotation and translations to align the x-ray information and stored the transformed images, the image processor 14 defines slices...*"), where it is described that the depth of the slices associated with the surface of the volumetric data may be predetermined.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider in view of Yanof et al.(hereinafter "Yanof", US Patent 5,371,778).

Regarding claim 4, Schneider fails to teach the limitations. Yanof describes a transverse view, which includes the identified surface and the selected point in column 4 lines 53-58 ("...*the operator positions a cursor 30 at a selectable location on the first view port or portion 22 of the video display D. A second view port 32 displays the data along the transverse plane 10 through the position of the cursor.*"), where it is described that a transverse view is established which includes the identified surface and selected point. Schneider also describes the depth associated with the identified surface is selected from this transverse view in column 4 lines 62-64 ("...*the displayed (x,y) plane is selected by adjusting the selected distance along the z-axis.*"),

where it is described that the depth may be selected from the transverse view. It would have been

obvious to one of ordinary skill in the art to combine the teachings of Schneider with Yanof

because this combination would provide efficient volumetric interaction of slices depicting

region of interest through modification of the depth of the transverse view of the volumetric data.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Said Broome whose telephone number is (571)272-2931. The

examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S. Broome
8/14/06

ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER